REMARKS/ARGUMENTS

In response to the Office Action dated May 4, 2004, claims 1, 10, and 15 are amended, and claims 21-22 are added. Claims 1-22 remain in the application. It is not the Applicants' intent to surrender any equivalents because of the amendments or arguments made herein. Reexamination and reconsideration of the application are respectfully requested.

Art-Based Rejections

In paragraph 1 of the Office Action, claims 1-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Admitted Prior Art (APA) in view of James, USPN 6,067,815. The Applicant respectfully traverses the rejections. However, in order to expedite prosecution, the Applicants have amended the claims for clarification. The Applicants respectfully submit that the claims are patentable in light of the clarifying amendments above and the arguments below.

The James Reference

The James reference discloses a multi-stage refrigeration system for a refrigeration unit, such as a retail refrigerator. The multi-stage refrigeration system includes a condensing unit and at least two evaporation units connected to the condensing unit through tubing and a plurality of valves. The valves may include a pair of selector valves, four check valves or any combination or type of valves necessary to control liquid and vapor flow through the refrigeration system. See Col. 2, lines 30-39.

The Claims are Patentable over the Cited Reference

The claims of the present invention describe a temperature control method for a refrigerator. The method includes providing a valve device having an inflow port, at least two outflow ports, and a valve element for performing opening/closing of the outflow ports. The method further includes providing a valve element drive device for driving the valve element and controlling the valve element drive device at the time a power source of the refrigerator is turned on to reciprocate between a first mode and a second mode.

The applied references do not teach nor suggest the limitations of the claims of the present invention. Specifically, the applied references do not teach nor suggest the limitation of controlling the valve element drive device, at the time a power source of the refrigerator is turned on, to reciprocate between a first mode on an OPEN-CLOSE mode side where the first outflow port is in an open state and the second outflow port is in a closed state and a second mode on a CLOSE-OPEN mode side where the first outflow port is in a closed state and the second outflow port is in an open state until a temperature in a first chamber and a temperature in a second chamber are lowered to reach to a prescribed temperature.

The conventional temperature control method of the APA teaches that the OPEN-OPEN mode is set for the first chamber and the second chamber. See Page 2, paragraph [0004] of the specification. The refrigerant is supplied to both the first chamber and the second chamber until the first chamber and the second chamber are lowered to respective prescribed temperatures. When the power source of the conventional refrigerator is turned on, the first chamber and the second chamber are cooled by setting in the OPEN-OPEN mode. In this case, there is a problem that cooling rates are often largely different from each other in the first and second

chambers. Consequently, when foods are stored in a cold state or in a frozen state, there is problem that the temperature difference in the first chamber or the second chamber becomes large, which causes dispersion in quality. See Pages 2-3, paragraph [0005] of the specification.

In contrast, the present teachings disclose that the OPEN-CLOSE mode and the CLOSE-OPEN mode are repeatedly reciprocated during the time period from the "on" of the power source to their respective states until the first chamber and the second chamber are lowered to their prescribed temperatures. In the OPEN-CLOSE mode, the first outflow port is in an open state and the second outflow port is in a closed state when the temperature in the first chamber is high and the temperature in the second chamber is adequate or low. In the CLOSE-OPEN mode, the first outflow port is in a closed state and the second outflow port is in an open state when the temperature in the second chamber is high and the temperature in the first chamber is adequate or low.

The present teachings disclose a method of controlling temperature in a refrigerator from the time the power source of the refrigerator is turned on to the time the temperatures of a first chamber and a second chamber are lowered to respective prescribed temperatures. When the power source of the refrigerator is turned on, the temperatures of the first and second chambers are not at the respective prescribed temperatures but may usually be at a room temperature.

Since the OPEN-CLOSE mode and the CLOSE-OPEN mode are reciprocated until temperatures in the first and second chambers are lowered to their prescribed temperatures, mechanical components of the refrigerator, such as the compressor, can be substantially protected from overload. Also, when the first and second outflow ports are respectively shifted from the open state to the closed state or vice

versa, the opening/closing by the valve element is performed gradually so that rapid variation in the flow rate of the refrigerant can be substantially prevented.

The ancillary James reference does not remedy the deficiencies of the Admitted Prior Art (APA). James does not teach nor suggest reciprocating first and second modes during the time period from the "on" of the power source to their respective states until the first chamber and the second chamber are lowered to their prescribed temperatures. To the extent that James teaches the use of two modes of operation, James specifically teaches that the first mode of operation is a regular cycle where the TES module of the evaporation units are sufficiently frozen to maintain the first and second sections at their targeted temperatures. In addition, the second mode of operation is a defrost cycle in which the refrigerant from first evaporation unit is removed to melt frozen water from the heat exchange surface of the first evaporation unit. The James teaching is different in scope and function to that of the claimed subject matter of the present application.

Thus, it is submitted that independent claim 1 is patentable over the applied references. In addition, independent claims 10 and 15 are also patentable for at least the same reasons as independent claim 1. The remaining claims 2-9, 11-14, and 16-20 are also patentable over the applied references, not only because they contain all of the limitations of the independent claims 1, 10, and 15, respectively, but because claims 2-9, 11-14, and 16-20 also describe additional novel elements and features that are not described in the applied references.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6742 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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Date: August 4, 2004

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